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REMARKS/ARGUMENTS

In response to the restriction requirement, Claims 1-31 were elected for further prosecution and have now been examined. Claims 32-54 were withdrawn and have now been canceled without prejudice to presentation in a divisional application. Each of the elected claims has been rejected. In particular, the Official Action rejects Claims 1-10, 12-14, 16-29 and 31 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,892,462 to My Tran. The remaining claims, i.e., Claims 11, 15 and 30, have been rejected under 35 U.S.C. § 103(a) as being unpatentable over the Tran '462 patent in view of U.S. Patent No. 4,985,854 to Timothy M. Wittenburg, in conjunction with Claim 11 and in view of U.S. Patent No. 5,381,338 to David A. Wysocki et al. in conjunction with Claims 15 and 30. As described below, independent Claims 1 and 17 have been amended to further patentably distinguish the claimed invention from the cited references, taken either individually or in combination. In addition, dependent Claims 55-58, have been added and are more particularly drawn to other patentable aspects of the present invention. As such, Applicant respectfully requests reconsideration of the application and allowance of the amended set of claims.

As set forth by independent Claims 1 and 17, an apparatus and method, respectively, are provided for automatically generating a terrain model for display during a simulated flight. Initially, the area containing the mission route for which terrain source data is required is determined. A plurality of predefined electronic collections of terrain source data are then automatically searched to identify terrain source data covering the area containing the mission route. The terrain source data is subsequently processed into one or more predefined formats and is then automatically compiled to create a terrain model for display during flight simulation.

As now amended, independent Claims 1 and 17 each further define the manner in which the plurality of predetermined electronic collections of terrain source data are searched. By way of each example, independent method Claim 17 has been amended to recite that terrain source data is identified from at least two alternative predefined electronic collections of terrain source data that represents a common region of the area containing the mission route and that the terrain source data from which the terrain model is subsequently constructed is selected from one of the plurality of alternative predefined electronic collections of terrain source data to represent the

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common region of the area containing the mission route. Independent apparatus Claim 1 has been amended in an analogous manner to further define the search engine to be capable of performing these same functions as described above in conjunction with amended independent Claim 17.

By way of further explanation, the searching of a number of different electronic collections of terrain source data, such as collections maintained by JSIPS, USIGS, MEL, the National Weather Service, USGS and commercial satellite services, advantageously permits the method and apparatus of the claimed invention to construct an accurate and up-to-date terrain model that is appropriate for the current and/or anticipated flight conditions. As described by page 13, lines 17-28 of the present application:

In searching the electronic collections of terrain source data, the search engine will oftentimes identify terrain source data maintained by different electronic collections that depict the same portion of the area. In these instances, the search engine reviews the terrain source data from each electronic collection and selects the terrain source data that is of the highest quality and is most recent. For example, the search engine will select a digital photograph of a portion of the area taken on a clear day in the past week instead of a digital photograph of the same portion of the area taken on an overcast day two months ago, assuming that the mission is intended to be performed on a clear day. As such, the digital photograph taken on a clear day will be more representative of the situation with which the pilot will actually be confronted during the flight.

None of the cited references, taken either individually or in combination, teaches or suggests the method and apparatus of amended independent Claims 1 and 17. In this regard, the Tran '462 patent describes a ground collision avoidance system for use during actual flight, as opposed to use in conjunction with flight simulation operations as per the claimed invention. The ground collision avoidance system of the Tran '462 patent utilizes a digital terrain elevation database to generate a terrain model of the terrain over which the aircraft is flying. The ground collision avoidance system utilizes inputs from various onboard sensors, such as active terrain sensors and/or the radio altimeter, to update the terrain data provided by the digital terrain elevation database. Thus, any variations between the prestored terrain data and the readings obtained by the onboard sensors can be detected and the terrain data can be updated.

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While the Tran '462 patent does describe the correction or updating of prestored terrain data, the Tran '462 patent does not teach or suggest identifying terrain source data from at least two alternative predefined electronic collections of terrain source data that represents a common region of the area containing the mission route and thereafter selecting the terrain source data from one of the plurality of alternative predefined electronic collections of terrain source data to represent the common region of the area containing the mission route, as now recited by amended independent Claims 1 and 17. In particular, the Tran '462 patent utilizes only a single predefined electronic collection of terrain source data, i.e., the digital terrain elevation database, as opposed to searching a plurality of electronic collections of terrain source data including at least two alternative predefined electronic collections of terrain source data that represent a common region, as recited by amended independent Claims 1 and 17. Since the Tran '462 patent only utilizes a single predefined electronic collection of terrain source data, the Tran '462 patent does not teach or suggest selecting the terrain source data from one of the alternative predefined electronic collections of terrain source data to represent the common region, as also recited by independent Claims 1 and 17.

By way of comparison, one embodiment of the method and apparatus of amended independent Claims 1 and 17 identifies several different collections of terrain source data that depict the same region and then selects one collection, i.e., one source, of the terrain source data for the region (typically the collection that best represents the region). The terrain source of this one collection is then processed and compiled to create that portion of the terrain model that is representative of the region. In contrast, the Tran '462 patent describes updating a single predefined collection of terrain source data based upon readings from various onboard sensors and does not selectively pick and choose from among several alternative predefined collections of terrain source data. Thus the Tran '462 patent does not teach or suggest the apparatus and method of amended independent Claims 1 and 17, respectively.

The secondary references, that is, the Wittenburg '854 patent and Wysocki '338 patent, also fail to teach or suggest the apparatus and method of amended independent Claims 1 and 17, taken either individually or in combination with the Tran '462 patent. In particular, the Wittenburg '854 patent and the Wysocki '338 patent both fail to teach or suggest identifying

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terrain source data from at least two alternative predefined electronic collections of terrain source data that represents a common region of the area containing the mission route and thereafter selecting the terrain source data from one of the plurality of alternative predefined electronic collections of terrain source data to represent the common region of the area containing the mission route, as now recited by amended independent Claims 1 and 17.

In contrast, both secondary references describe the combination of a digitized photograph with elevation data to transform a two-dimensional photograph into a three-dimensional terrain model. Thus, while both the digitized photograph and the elevation data may represent the same region, neither the Wittenburg '854 patent nor the Wysocki '338 patent select the terrain source data from one of the alternative collections of terrain source data to represent the common region. In other words, neither the Wittenburg '854 nor the Wysocki '338 patent teach or suggest treating the digitized photograph and the elevation data as alternatives and selecting one of the alternative sources of terrain source data for use during construction of the terrain model. Instead, the systems of the Wittenburg '854 patent and the Wysocki '338 patent are specifically designed to utilize both the digitized photograph and the elevation data to construct a terrain model. Thus, even if these secondary references were combined with the Tran '462 patent, the combination of references would still fail to teach or suggest "selecting the terrain source data from one of the plurality of alternative predefined collections of terrain source data to represent the common regions . . .", as now recited by amended independent Claims 1 and 17.

In addition, the cited references, taken either individually or in combination, fail to teach or suggest processing the terrain source data into one or more predefined formats, as recited by amended independent Claims 1 and 17. Thus, the apparatus and method of the claimed invention can receive terrain source data in a variety of formats and can process the terrain source data into an acceptable format. In contrast, none of the cited references teach or suggest any type of processing to obtain terrain source data in a predefined format. Instead, the systems described by the cited references are described in such a manner that the terrain source data appears to already be in an acceptable format. With particular reference to the Tran '462 patent, it is noted that the digital terrain elevation data is updated by readings obtained from various onboard sensors. However, the Tran '462 patent does not teach or suggest that the format of the

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digital terrain elevation data is processed into another format that is acceptable. Instead, the digital terrain elevation data itself, as opposed to the format of the digital terrain elevation data, is apparently updated.

For each of the foregoing reasons, Applicant therefore respectfully submits that the rejection of independent Claims 1 and 17 is therefore overcome.

The dependent claims include the recitations of a respective independent claim and are therefore patentably distinct from the cited references for at least the same reasons as described above in conjunction with the respective independent claims. However, a number of the dependent claims include additional recitations that are not taught or suggested by the cited references and are therefore patentably distinct for these additional reasons.

For example, dependent Claims 8 and 24 recite that terrain source data from prior mission routes is stored. Further, dependent Claims 9-11 and 25-26 build upon Claims 8 and 24, respectively, by describing the utilization of the terrain source data from prior mission routes as one of the predefined electronic collections of terrain source data from which the terrain model is constructed. The Official Action indicates that column 5, lines 57-62 of the Tran '462 patent describes the storage of data from prior mission routes. However, the Tran '462 patent does not teach or suggest the storage of data from prior mission routes. Instead, the passage from the Tran '462 patent that was referenced by the Official Action relates to the use of information from a variety of onboard systems, none of which are described to be providing any data from prior mission routes. Likewise none of the other cited references teach or suggest the storage of terrain source data from prior mission routes and the use of terrain source data from prior mission routes as one of the predefined electronic collections of terrain source data, as now recited by dependent Claims 8-11 and 24-26. Thus, dependent Claims 8-11 and 24-26 are patentably distinct from the cited references, taken either individually or in combination, for these additional reasons.

For each of the foregoing reasons, Applicant respectfully submits that the rejection of dependent Claims 2-16 and 18-31 is therefore overcome.

Additionally, new dependent Claims 55-58 have been added to more specifically recite other patentable features of the present invention. In this regard new dependent Claims 55 and

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57 recite obtaining metadata defining parameters associated with a respective electronic collection of terrain source data and thereafter identifying and selecting the terrain source data based upon the metadata. New dependent Claims 56 and 58 depend from Claims 55 and 57, respectively, and further recite that the metadata is stored in a first memory device, while the terrain source data is stored in a second memory device. By utilizing metadata, the method and apparatus of the claimed invention can search the plurality of predefined electronic collections of terrain source data more efficiently. As described on page 14, line 18 – page 15, line 3 of the present application:

Typically, the search engine 24 does not initially obtain the terrain source data. Instead, the search engine preferably initially obtains information representative of the terrain source data. This information that is representative of the terrain source data is commonly termed "metadata". The metadata typically defines the geographical region covered by the associated terrain source data and indicates the type of terrain source data, such as a digital photograph or the like, and the date on which the terrain source data was obtained. In addition, the metadata may provide an indication of the conditions under which the terrain source data was obtained, such as cloudy, clear, rainy or the like. See block 54 of Figure 4. Based upon the metadata, the search engine can identify terrain source data that covers the entire area for which terrain source data is required and can determine the terrain source data that will provide the highest quality image of the area.

By initially obtaining and reviewing information, such as metadata, representative of the terrain source data, however, the search engine 24 can more efficiently perform the search and analysis process than if the search engine obtained the terrain source data itself. In this regard, the metadata is typically a much smaller quantity of data than the associated terrain source data. As such, the metadata can be much more efficiently transferred and analyzed than the terrain source data.

None of the cited references teach or suggest obtaining any type of metadata and, as such, none of the cited references teach or suggest obtaining metadata defining parameters associated with a respective electronic collection of terrain source data, identifying and selecting the terrain source data based upon the metadata, and storing the metadata and the terrain source data in separate memory devices, as now recited by the new dependent claims. In this regard, the Wittenburg '854 patent stores both digitized photographs and elevation data and the Official Action alleges that it would be obvious to store these two different types of data in different memory devices. Nevertheless, none of the cited references including the Wittenburg '854

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patent describe obtaining metadata defining parameters associated with a respective electronic collection of terrain source data and thereafter identifying and selecting the terrain source data based upon the metadata. As such, Applicant submits that new dependent Claims 55-58 are therefore patentably distinct from the cited references, taken either individually or in combination.

CONCLUSION


In view of the amendments to the claims and the foregoing remarks, Applicant submits the rejections raised by the Official Action have been overcome and that the application is in condition for allowance. As such, Applicant respectfully requests the issuance of a Notice of Allowance. If there remain any issues with the respect to the present application, it is requested that the Examiner contact Applicant's undersigned attorney in order to expeditiously advance examination of the present application.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required

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therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

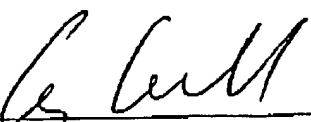

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